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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/412,403	10/05/1999	JOHN SANTEE	RATLP009	9613

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EXAMINER

BASOM, BLAINE T

ART UNIT	PAPER NUMBER
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2173

DATE MAILED: 07/31/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/412,403

Applicant(s)

SANTEE ET AL.

Examiner

Blaine T Basom

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 6, 9 and 11-21 is/are rejected.
- 7) ☒ Claim(s) 4, 5, 7, 8 and 10 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 October 1999 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

At the outset, it is noted that U.S. Patent No. 5,754,760 has been issued for U.S. Patent Application No. 08/655,149, which is incorporated to the present application. Subsequently, the present application should be amended to reflect this.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 through 3, 6, and 11 through 15 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by European Patent Application number 869433 attributed to Anodide et al.

Anodide et al. discloses a methodology for constructing a graphical representation of a GUI comprised of the following actions:

1. Starting the GUI software
2. A “tour of the interface” is performed by successively invoking each window of the GUI. Anodide et al. states that this “tour” may be performed manually or instead, be automated (see column 12, line 1).
3. A “GUI object forest” and an “Opens Relation” are constructed (see column 8, line 52). The GUI object forest is a collection of trees; each tree representing a window that appears

in the GUI and that is not contained in any other window. The roots of these trees represent the window itself, while the nodes at level $i+1$ represent GUI objects that are contained in an object at level i . The “Opens Relation” is a set of (op, win) pairs; where performing the operation, op , causes the window, win , to open. It is assumed that the “GUI object forest” and the “Opens Relation” can be constructed as the “tour of the interface” is performed.

4. From the “GUI object forest” and “Opens Relation”, a graph of the GUI is created. Each node in the graph corresponds to a root of a tree in the “GUI object forest” and the edges of the graph are inserted according to the “Opens Relation”. Inherently, this means that the nodes in the graph correspond to windows in the GUI and that edges in the graph correspond to operations that open the windows they point to.

Referring to claim 1, the creation of trees in the “GUI object forest” and (op, win) pairs in the “Opens Relation” for the active windows in the interface, as described in the methodology of Anodide et al. above, is equivalent to identifying a first set of windows that are active on the desktop of the computer.

Performing an action on a graphical user interface object in a window of the application is inherent in performing a “tour of the interface.” As explained above, and in Anodide et al., the “tour of the interface” requires opening each window in the GUI. It is a common practice in the art to allow GUI windows to open via GUI objects in active windows on the desktop of a computer. Thus, by performing actions on GUI objects in the windows of the application, a “tour of the interface” can be carried out.

The “GUI object forest” and “Opens Relation”, described by Anodide et al., anticipates identifying a second set of windows that are active on the desktop of the computer. The disclosure of Anodide et al. implies that for a second set of windows on the desktop, a (op, win) pair in the “Opens Relation” is created or already exists for each active window. Similarly for each active window in the second set, a tree is created or already exists in the “GUI object forest” whose nodes represent GUI objects in the window. An ordering of the pairs in the relation and of the nodes in the trees, as is common in the art, can be considered equivalent to enumerating the windows and GUI objects of the second set of windows.

Furthermore, it is implied by Anodide et al. that the first set of windows must be compared to the second set of windows to identify a new window in the second set. Anodide et al. acknowledges that a given window in the application could be opened by various different operations and that a given operation could open several different windows. Consequently, the operation-window pair of the “Opens Relation” of Anodide et al. has a many-to-many relationship (column 9, line 8). Therefore it can be deducted that as “Opens Relation” (op, win) pairs are created for a second set of active windows on the desktop, it must be determined if each window in the second set already exists in the relation. Thus, each window in the second set is compared to windows that are already in the “Opens Relation”, which includes windows in the first set.

Finally, creating a graph from the “Opens Relation” and the “GUI object forest”, as explained by Anodide et al., is equivalent to adding a new window to a map of the graphical user interface of the application. As Anodide et al. discloses, a new window that is encountered during the “tour of the interface”, has a tree created for it in the “GUI object forest” and a (op,

win) pair in the in the “Opens Relation”, from this, a node is created for the tree in the graph representing the GUI of the application.

Referring to claim 2, Anodide et al. discloses an “Opens Relation”, which, as described above, each operation-window pair of the “Opens Relation” has a many-to-many relationship (column 9, line 8). Therefore it can be deducted that as “Opens Relation” (op, win) pairs are created for a set of active windows on the desktop, which could include new windows, it must be determined if each window in the set already exists in the relation. Thus, each window in the set is compared to windows that are already in the “Opens Relation”. Since the “Opens Relation” is used to construct the graph of the GUI, this is equivalent to analyzing the graph to determine if the new window is already present in the map.

Referring to claim 3, the many-to-many attribute of the “Opens Relation”, as disclosed by Anodide et al., implies that the same window could be opened by more than one operation. Additionally, the “Opens Relation” is used to construct a graph representative of the GUI of an application, wherein the nodes of this graph represent windows of the GUI and edges of the graph represent operations that open the windows they point to. Thus, it is conceivable that two edges could point to a node in the graph, meaning that two operations could open the same window. This is equivalent to adding a shortcut to a window that is already present in the map.

Regarding claim 6, it is shown above that in the method of Anodide et al., each new window is compared to windows that are referenced in the “Opens Relation”, which is

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equivalent to analyzing the graph to determine if the new window is already present in the map. Also as discussed above, the “Opens Relation” is a set of (op, win) pairs, where “win” is a reference to a window. The value for “win” can be the name of the window to which it refers. Thus, the comparison in the method of Anodide et al. implies a comparison of window names, where the new window is determined to already be present in the “Opens Relation” if the new window and the window in the “Opens Relation” have the same name. And as discussed above, since the “Opens Relation” is used to create the map, this is equivalent to determining that the new window is already present in the map if the new window and a window in the map have the same name.

Referring to claim 11, reference letter B in FIG. 6 of the Anodide et al. application refers to a graph, representing the GUI of an application, on a computer. The graph is of a similar structure and functionality as a map and can therefore be considered equivalent.

Referring to claim 12, the map shown in FIG. 6 of Anodide et al. is hierarchical, includes windows, and the edges of the map represent user actions. No user interface objects are shown in the map. However, the method described by Anodide et al. uses a “GUI object forest” to create the map. As described previously, the “GUI object forest” is a collection of trees whose roots represent windows of the GUI and whose nodes represent GUI objects in the windows. Thus it would be a trivial task to add GUI objects to the map of FIG. 6 by simply replacing each node in the map of FIG. 6 by its corresponding tree in the “GUI object forest.”

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In regards to claims 13 and 14, it was described above, in the discussion about claim 1, that the system of Anodide et al. requires that actions be performed on graphical user interface objects in order to perform a “tour of the interface”. It is well known in the art that graphical user interface objects can include buttons, sliders, check boxes, and tab controls. Additionally, it is well known in the art that actions to be performed on user interface objects can include left mouse clicks, right mouse clicks, left mouse double clicks, and keystrokes.

Referring to claim 15, the “computer program product” declared in claim 15 is inherent in the “computer implemented method” declared in claim 1. Therefore claim 15 is rejected for the same reasons that claim 1 is rejected. Additionally, the abstract of Anodide et al. declares that the system of Anodide et al. utilizes “recorded test sequences and test designs”. Recorded test sequences imply a computer storage medium.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Anodide et al. in view of Parker et al. Anodide et al. discloses a computer implemented method of mapping a graphical user interface that is equivalent to the method disclosed in claim 1. However, Anodide et al. does not disclose that the method comprises receiving user input specifying that one or more graphical user interface objects should be ignored when generating the map. However, in column 29, line 5 of Parker et al. it is disclosed that when performing a comparison of two windows, a user can be allowed to mask out areas of a window. This implies that a user can specify that one or more graphical user interface objects can be ignored; the user can mask out areas of the window that the objects are located. Therefore, it would have been obvious to one of ordinary skill in the art, having the teachings of Anodide et al. and Parker et al. before him at the time the invention was made, to modify the method of mapping a graphical user interface taught by Anodide et al. to include the method of comparison of Parker et al., where a user can specify that one or more graphical user interface objects should be ignored. It would have been advantageous to one of ordinary skill to utilize such combination because windows often contain areas where differences are considered insignificant and should be ignored, as taught by Parker et al.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Anodide et al. in view of the state of the art. As discussed above, Anodide et al. discloses a computer program product for mapping a user interface equivalent to that of claim 15. However, Anodide et al. does not acknowledge that the computer readable medium expressed in claim 15 is a CD-ROM, floppy disk, tape, flash memory, system memory, hard drive, or data signal embodied in a carrier

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wave. Nevertheless it is extremely well known in the art that a computer readable medium could be a CD-ROM, floppy disk, tape, flash memory, hard drive, or data signal embodied in a carrier wave. The examiner takes OFFICIAL NOTICE of this teaching. Therefore, it would have been obvious to one of ordinary skill in the art, having the teachings of Anodide et al. before him, to modify the computer program product of Anodide et al. such that the computer readable medium could be a CD-ROM, floppy disk, tape, flash memory, system memory, hard drive, or data signal embodied in a carrier wave. It would have been advantageous to one of ordinary skill to utilize such combination because CD-ROMs, floppy disks, tapes, flash memories, hard drives, and data signals embodied in carrier waves are all conventional mediums for data storage and experience a lot of use, as made known by the state of the art.

Claims 17 through 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anodide et al. in view of Mongan et al. Anodide et al. discloses a visual test design system that can programmatically execute an application to generate a map of the graphical user interface of the application, as is discussed above. The application mapper of Anodide et al. generates the map by performing a "tour of the interface", which is equivalent to recursively opening windows in the interface to identify new windows and add new windows to the map. As discussed above in the rejection for claim 1, opening windows is equivalent to performing actions on the graphical user interface. In addition, the map of Anodide et al. is hierarchical and includes windows, graphical user interface objects and actions as is discussed above in the rejection for claim 12. Also as was shown earlier in the rejection for claim 13, the graphical user interface objects represented in the Anodide et al. map includes buttons, sliders, check boxes, and tab

controls. And as discussed earlier in the rejection for claim 14, the actions represented the map of Anodide et al. include left mouse clicks, right mouse clicks, left mouse double clicks, and keystrokes. Furthermore, Anodide et al. recognizes that a script generator can generate scripts that include instructions to test the application, and that these scripts can be executed by a capture/replay tool.

However, Anodide et al. does not specifically disclose that the script generator utilizes the map to generate scripts. On the other hand, Mongan et al. discloses a test generator that iteratively selects paths through a cyclic directed graph in order to create scripts (see column 3, line 19 and column 5, line 13). This cyclic directed graph could be equivalent to a map of the graphical user interface; Anodide et al. acknowledges that a cyclic directed graph could represent the interface of an application. Thus, it would have been obvious to one of ordinary skill in the art, having the teachings of Anodide et al. and Mongan et al. before him at the time the invention was made, to modify the visual test design system taught by Anodide et al. to include the script generator of Mongan et al., because the script generator of Mongan et al. has a higher degree of automation than that of Anodide et al., making it less expensive.

Allowable Subject Matter

Claims 4, 5, 7, 8, and 10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The following is an examiner's statement of reasons for allowance:

In regards to claims 4 and 5, no prior was found that refers to a similarity threshold, wherein the similarity threshold is a percentage of graphical user interface objects that the new window and the window in the map have in common.

Referring to claims 7, 8, and 10, no prior art was found that specifies user input concerning windows being considered the same or different, or how long to wait before identifying a second set of windows after performing an action.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

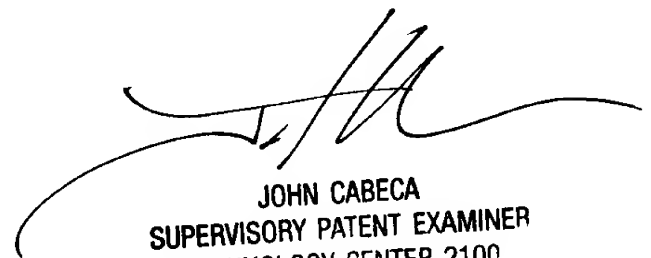
The prior art made of record on form PTO-892 and not relied upon is considered pertinent to applicant's disclosure. Applicant is required under 37 C.F.R. § 1.111(c) to consider these references fully when responding to this action. The documents cited therein teach additional methods of mapping and analyzing graphical user interfaces. Additionally, the documents further teach methods of utilizing graphical user interface maps to create scripts that include instructions to test applications.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Blaine T Basom whose telephone number is (703)305-7694. The examiner can normally be reached on 8:30 - 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Cabeca can be reached on (703)308-3116. The fax phone numbers for the organization where this application or proceeding is assigned are (703)746-7238 for regular communications and (703)746-7240 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 305-3900.

btb
July 22, 2002



JOHN CABECA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100